

## CLAIMS

1. A streak apparatus comprising:

a vacuum container having an electron beam source provided on one end side to emit an electron beam and an output section provided on the other end side to convert the electron beam emitted from the  
5 electron beam source into an image;

an accelerating section provided in the vacuum container to accelerate the electron beam emitted from the electron beam source;

an irradiation optical system for collecting and applying to-be-measured light to the electron beam accelerated by the accelerating  
10 section; and

a sweep section provided between the accelerating section and the output section in the vacuum container to sweep the electron beam having interacted with the to-be-measured light in a direction  
15 approximately perpendicular to the direction of a displacement of the electron beam generated through the interaction.

2. The streak apparatus according to claim 1, wherein the accelerating section is adapted to accelerate the electron beam using a laser beam or an electromagnetic field generated in an RF cavity.

20 3. The streak apparatus according to claim 1, further comprising an electron lens system arranged in the stage following the accelerating section in the vacuum container to focus the electron beam from the accelerating section on the output section.

25 4. The streak apparatus according to claim 3, wherein the electron lens system has a magnifying electron lens arranged in the stage following the region for the interaction between the to-be-

measured light and the electron beam to magnify the displacement of the electron beam generated through the interaction with the to-be-measured light to form an image on the output section.

5        5. The streak apparatus according to claim 4, wherein the magnifying electron lens is arranged between the region for the interaction between the to-be-measured light and the electron beam and the sweep section.

10       6. The streak apparatus according to claim 1, further comprising an energy filter arranged between the accelerating section and the output section in the vacuum container to pass an electron beam having a predetermined energy therethrough.

7. The streak apparatus according to claim 1, wherein the electron beam source is a photoelectric surface for converting received light into photoelectrons.

15       8. The streak apparatus according to claim 1, wherein the sweep section is adapted to sweep the electron beam using an electric field due to a deflection voltage applied between a pair of deflection electrodes that face each other across the tube axis of the vacuum container, a laser beam, or an electromagnetic field generated in an RF  
20       cavity.